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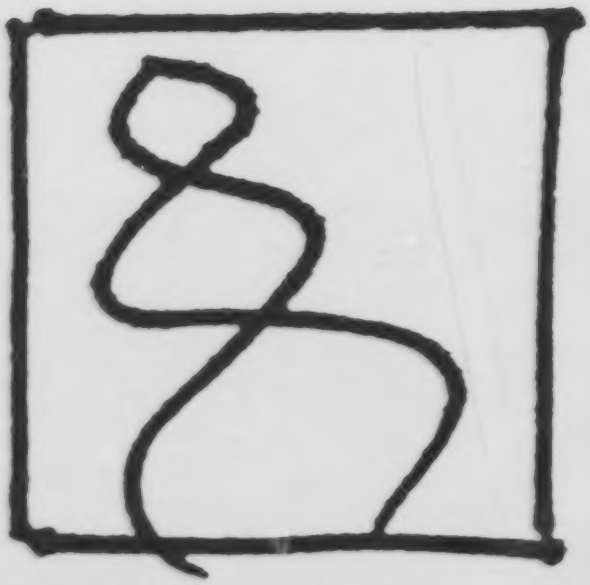

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Biogas and Alcohols from Biomass

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S3	S2 and PY=1986:PY=1990

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(1gel x h) -1 to 26.7 g x (1gel x h) -1, when the ethanol concentration at the outlet was about 80 g/1. The yield coefficient of ethanol was also increased from 0.41 g ethanol/g glucose to 0.43 after 02 suplement was started. The effects of frequency and duration of 02 supplement were also determinec.

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Effects of environmental conditions on xylose fermentation by recombinant Escherichia coli.
APMBA. Onta, K. ; Alterthum, F.-Ingram, L.O. Washington, D.C. : American Society for Microbiology. Applied and environmental microbiology. Feb 1990. v. 56 (2). p. 463-465. Includes references. (NAL Call No.: DNAL 448.3 AP5).
In batch fermetations, optimal conversion of xylose to ethanol by recombinant Escherichia coli was obtained under the following conditions: 30 to 37 degrees C, pH 6.4 to 6.8, 0.1 to 0.2 M potassium phosophate buffer, and xylose concentrations of 8% or less. A yield of 39.2 g of ethanol per liter (4.9% ethanol by volume) was observed with 80 g of xylose per liter, equivalent to 96% of the maximum theoretical yield. Maximal volumetric productivity was 0.7 g of ethanol per liter per h in batch fermentations and 30 g of ethanol per liter per h in concentrated cell suspensions (analogous to cell recycling).

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Effects of temperature on microbial production. IV. The influence of ethanol on the temperature-profile curve of ethanol production.
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Efficiency of genetically engineered yeast in the production of ethanol from dextrinized cassava starch.
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ELISA techniques for the determination of methanogenic bacteria.
AMBIDG. Bryniok, D. ; Trosch, W. Berlin, W. Ger. : Springer International. Applied microbiology and biotechnology. Dec 1989. v. 32 (2). p. 235-242. Includes references. (NAL Call No.: DNAL QR1.E9).
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Fermentation of dilute-acid-pretreated mixed hardwood and Avicel by Clostridium thermocellum was compared in batch and continuous cultures. Maximum specific growth rates per hour obtained on cellulosic substrates were 0.1 in batch culture and greater than 0.13 in continuous culture. Cell yields (grams of cells per gram of substrate) in batch culture were 0.17 for pretreated wood and 0.15 for Avicel. Ethanol and acetate were the main products observed under all conditions. Ethanol:acetate ratios (in grams) were approximately 1.8:1 in batch culture and generally slightly less than 1:1 in continuous culture. Utilization of cellulosic substrates was essentially complete in batch culture. A prolonged lag phase was initially observed in batch culture on pretreated wood; the length of the lag phase could be shortened by addition of cell-free spent medium. In continuous culture with approximately 5 g of glucose equivalent per liter in the feed, substrate conversion relative to theorectical ranged from 0.96 at a dilution rate (D) of 0.05/h to 0.48 at a D of 0.167/h for Avicel and from 0.75 at a D of 0.05/h to 0.43 at a D of 0.11/h for pretreated wood. At feed concentrations of less than 4.5 g of glucose equivalent per liter, conversion of pretreated wood was 80 to 90% at D = 0.083/h. Lower conversion was obtained at higher feed substrate concentrations, consistent with a limiting factor other than cellulose. Free Avicelase activities of 12 to 84 mU/ml were observed, with activity increasing in this order: batch cellobiose, batch pretreated wood less than batch Avicel, continuous pretreated wood less than continuous Avicel. Free cellulase activity was higher at increasing extents of substrate utilization for both pretreated wood and Avicel under all conditions tested. The results indicate that fermentation parameters, with the exception of free cellulose activity, are essentially the same for pretreated mixed hardwood and Avicel under a variety of conditions. Hydrolysis yie

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Fermentation of D-xylose, D-glucose and L-arabinose mixture by Pichia stipitis Y 7124: sugar tolerance.
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Immobilization of Saccharomyces uvarum cells in porous beads of polyacrylamide gel for ethanolic fermentation.
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Glucose and xylulose fermentation and product formation by Saccharomyces cerevisiae were compared in batch culture under anaerobic conditions. In both cases the main product was ethanol, with glycerol, xylitol, and arabitol produced as by-products. During glucose and xylulose fermentation, 0.74 and 0.37 g of cell mass liter-1, respectively, were formed. In glucose-fermenting cells, the carbon balance could be closed, whereas in xylulose-fermenting cells, about 25% of the consumed sugar carbon could not be accounted for. The rate of sugar consumption was 3.94 mmol g of initial biomass-1 h-1 for glucose and 0.39 mmol g of initial biomass-1 h-1 for xylulose. Concentrations of the intermediary metabolites fructose-1,6-diphosphate (FDP), pyruvate (PYR), sedoheptulose 7-phosphate (S7P),

erytrose 4-phosphate, citrate (CIT), fumarate, and malate were compared for both types of cells. Levels of FDP, PYR, and CIT were lower, and levels of S7P were higher in xylulose-fermenting cells. After normalization to the carbon consumption rate, the levels of FDP were approximately the same, whereas there was a significant accumulation of S7P, PYR, CIT, and malate, especially of S7P, in xylulose-fermenting cells compared with in glucose-fermenting cells. In the presence of 15 microM iodoacetate, an inhibitor of the enzyme glyceraldehyde-3-phosphate dehydrogenase (EC 1.2.1.12), FDP levels increased and S7P levels decreased in xylulose-assimilating cells compared with in the absence of the inhibitor, whereas fermentation was slightly slowed down. The specific activity of transaldolase (EC 2.2.1.2) the pentose phosphate pathway enzyme reacting with S7P and glyceraldehyde-3-phosphate, was essentially the same for both glucose- and xylulose-fermenting cells. It was, however, several orders of magnitude lower than that reported for a Torula yeast and Candida utilis. The presence of iodoacetate did not influence the activity of transaldolase in xylulose-fermenting cells. The results are disc

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